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Lead and Copper Monitoring

Guidance for public water system operators

The Lead and Copper Rule, established by the U.S. Environmental Protection Agency (EPA) and adopted by Washington State, is designed to minimize the amount of lead and copper consumers get from drinking water. The rule requires all Group A community and non-transient non-community public water systems to monitor lead and copper levels in drinking water.

Unlike other contaminants, lead and copper do not occur notably in source water. Instead, they result from corrosion of building plumbing, faucets and water fixtures. Therefore, the purpose of this monitoring is to determine if water systems are distributing corrosive water. Systems with corrosive water are required to investigate and determine the best way to control corrosion.

For infants and young children, elevated levels of lead can lower birth weights and slow normal physical and mental development. For adults, it can damage kidneys, slightly increase blood pressure and impair reproductive function. High levels of copper can cause nausea and diarrhea.

Distribution System Monitoring Requirements

Lead and copper monitoring involves both initial and reduced monitoring. To ensure monitoring results represent the entire community, the number of water tap samples to be analyzed is based on population.

Initial monitoring – Collect samples from a full number of sample sites (see table) within a set six-month period, and then a second full number of samples during the next six months. If both sample sets are at or below the action levels for lead and copper, the water system is eligible for a reduced monitoring schedule.

Tap Samples Required for Lead and Copper Monitoring

Residential Population	Initial Monitoring – Number of sample sites	Reduced Monitoring – Number of sample sites
More than 100,000	100	50
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
100 or Fewer	5	5

Reduced monitoring – If both initial sample sets are at or below the action levels for lead and copper, the system qualifies for reduced monitoring at fewer sample sites (see table) between June and September in each of the following two years. If the annual samples also are at or below the action levels, monitoring is reduced to once every three years between June and September.

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

HELPING TO ENSURE SAFE AND RELIABLE DRINKING WATER

Action Levels

The "action level" is the amount of lead or copper that triggers the requirement for a water system to investigate and determine the best way to control corrosion.

The action level is 0.015 milligrams per liter (mg/L) for lead and 1.3 mg/L for copper.

The action level for lead and copper at individual water systems is based on the level of lead and copper in 90 percent of the samples. A calculation that uses the sample results – in order from highest to lowest – is used to determine this "90th percentile."

When you receive the lab results from your sampling, submit them to the state Department of Health (DOH). Check with your lab; some labs will submit results to DOH for you. When DOH receives your results, staff will calculate the 90th percentile, and contact you if the results exceed an action level.

Exceeding an Action Level

Water systems exceeding the action level for lead or copper are required to begin follow-up investigations immediately. Improvements or operational changes must be in place within about four years after the system initially exceeds the action level.

Water systems that exceed the lead action level must immediately begin a public education campaign that includes specific language. For assistance, call the DOH regional lead copper staff listed on page 3.

For corrosion control treatment strategies and requirements, see EPA's:
Lead and Copper Monitoring and Reporting Guidance for Public Water Systems (816-R-02-009)*
Revised Guidance Manual for Selecting Lead and Copper Control Strategies (816-R-03-001)*

Selecting Sample Sites

Water samples should be collected from homes most vulnerable to lead and copper corrosion. Generally, that includes homes built between 1982 and 1987 with copper pipes.

You will need homeowners to volunteer to collect the samples. If the full number of sample sites cannot be found, older homes or homes with other plumbing materials can be used. You also can consider sampling at homes with plastic service lines and plastic interior plumbing for monitoring because water fixtures remain a source of lead and copper in tap water. Faucets may contain as much as 8 percent lead by weight (the current legal limit).

It is best not to include homes with recent plumbing repairs or replacement due to the potential for increased levels of lead or copper. You may change locations for reduced sampling if an original sample site is no longer available.

For sample site selection criteria, see EPA's *Lead and Copper Monitoring and Reporting Guidance for Public Water Systems* (816-R-02-009)*

Provide sample results to each homeowner

Consider giving the homeowners in your sampling program the results of the tests taken in their homes. This information may help you recruit participants for your sampling program.

Two DOH fact sheets explain the health effects of lead and copper and ways residents can protect themselves from exposure:

Copper in Drinking Water (331-178)*
Lead in Drinking Water (331-177)*

You can distribute them to your customers if you exceed the action level. However, if you exceed the lead action level, you also must immediately begin a public education campaign.

Sample Collection Procedures

Samples should be collected from cold-water taps that are undisturbed for at least six hours, but no more than 12 hours. Therefore, ask homeowners to take samples first thing in the morning.

This minimum six-hour standing time helps to standardize the test results. It also reflects EPA's findings that "a significant portion of drinking water consumption is standing water."

Lead and copper levels increase as long as water stands in a home's plumbing system. Lead levels can increase significantly even after only two hours of non-use. Water that stands longer than 12 hours may have high lead and copper levels that do not represent typical conditions.

It is important to note that water systems are not accountable for the materials used inside homes. They are, however, accountable for the corrosive nature of the water they provide to their customers.

Be sure to provide instructions for homeowners who are collecting samples. Step-by-step water tap sampling procedures are in DOH's *Lead and Copper Sampling Procedure* (331-227)*.

Testing Source Water for Lead and Copper

All community and non-transient non-community water systems also are required to collect samples from their source water and have them analyzed for inorganic chemicals, which include lead and copper. However, even if these tests indicate the amount of lead and copper in source water is below the action level, water systems still must monitor for lead and copper in tap water. Remember, lead and copper do not occur in significant amounts in source water. They result primarily from corrosion of plumbing materials in buildings (pipes, fixtures and solder containing lead).

Resources

Department of Health Regional Lead Copper Staff

Eastern Region:	Ed Parry – (509) 456-2714
Northwest Region:	Steve Hulsman – (253) 395-6777
Southwest Region:	Belle Fuchs or Donna Freier – (360) 586-5179

***Publications**

The publications referenced in this document are available on DOH's Web site at http://www4.doh.wa.gov/dw/publications/publications.cfm

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